

PTO: 06-1526

Japanese Published Unexamined Patent Application (A) No. 03-168985,
published July 22, 1991; Application Filing No. 1-306820, filed November
27, 1989; Inventor(s): Masayuki Kuroda; assignee: Sony
Corporation; Japanese Title: Disk Devices

Disk Devices

CLAIM(S)

A disk device for recording on and reproducing information from a recording medium in disk form by a head mounted on the leading edge of a head moving member, wherein a buffer member is installed along said head moving path at the position opposite to the said head.

DETAILED DESCRIPTION OF THE INVENTION

(Field of Industrial Application)

The present invention pertains to a disk device appropriate for recording and reproducing on and from a recording medium in disk form.

(Summary)

The present invention present a disk device for recording and reproducing information on and from a recording medium by a head attached to the leading edge of the head moving member. In this device, a buffer member is installed at the position opposite to said disk-formed

recording medium to prevent the damage to the head that can be caused by an impact.

(Prior Art)

With the prior art hard disk device for recording and reproducing, as disclosed in Japanese Unexamined Patent Application 55-022296, a first supporting member 2 made of leaf spring is attached to the leading edge of the head moving member 1, as shown in Fig. 3. To the leading edge, is attached a second supporting member 3 made of lead spring which is thinner and softer than that constituting the first supporting member 2, and to the movable section of this second supporting member 3, is attached a head 4 with a slider constituting the head.

By rotating at high speed the hard disk 5 which is a disk-formed recording medium, the slider head 4 is made to float from the hard disk 5 against the elastic force of the first and second supporting members 2 and 3 at micron order, and by moving (scanning) the slider-attached head 4 in the radial direction of hard disk 5, the recording and reproducing is performed by the hard disk. The second supporting member 3 controls the orientation of the slider-attached head 4 that floats from the hard disk 5.

(Problems of the Prior Art to Be Addressed)

With the prior art hard disk device, however, if a great impact is exerted in the arrow a direction, which is an orthogonal direction to the hard disk 5, the second supporting member 3 will be rotated in the arrow a direction by the first supporting member 2 and the second supporting member 3 as the head supporting section and the slider-attached head 4 will be easily damaged, which is a problem. If the disk device is for a lap-top PC, said impact may exceed 200 G, so the damage to the head supporting section will be a problem.

The present invention attempts to present a disk device that can prevent the impact-caused damages to the head supporting section and head.

(Means to Solve the Problems)

To accomplish said objective, in the disk device of the present invention, a buffer member is installed along the moving path of said head at the position opposite to the head.

(Operation)

With the disk device thus constructed, when it has a great impact in the orthogonal direction to the disk-formed recording medium, the head is brought into contact with the buffer member, reducing the impact, and the damage to the head supporting section and to the head can be prevented.

(Embodiment Example)

One example into which the present invention was embodied into a hard disk is explained below with reference to Fig. 1 and Fig. 2. The same reference number is supplied to the same constituent element in the prior art of Fig. 3 and redundant explanation is omitted.

As is publicly known, the hard disk device is sealed inside the housing 8 constructed by the housing body 6 doubled as the chassis and by the housing cover 7. The hard disk 5 is mounted on the spindle 10 of spindle motor 9 installed inside the housing body 6 and is rotated in the arrow b direction at high speed. The head moving member 1 is swiveled/driven by the voice coil motor 12 in the arrow c direction on the center of swiveling center axis 1 installed inside the housing body 6.

On the leading edge of head moving member 1, are mounted a pair of upper and lower first supporting members, and on their leading edges, a pair of upper and lower heads 4 with a slider are mounted via the pair of second supporting members 3.

By the air stream generated by the high speed rotation of hard disk 1 in the arrow b direction, the pair of upper and lower heads with a slider are floated above and under the hard disk 1 against the elastic force of the first and second supporting members 2 and 3 at micron order. Then, by the head

moving member 1, the pair of heads with a slider are moved in the arrow c direction, which is almost in the radial direction of the hard disk 5, and thus the top and bottom surfaces of hard disk 1 are recorded and reproduced.

Near the position opposite to the hard disk 5 of the pair of heads 4 with a slider, a pair of upper and lower buffer members 13 are installed along the moving path in the arrow c direction of heads 4 with a slider. The pair of upper and lower buffer members 13 are preferably made of elastic material having a high shock-absorbing characteristic, such as a silicone rubber or an elastic foam member. The pair of upper and lower buffer members 13 are attached to the housing body 6 on the inner surface of the housing 8 and housing cover 7 with an adhesive. In addition, a circulation filter 14 is installed at the position near the buffer member 13 on the outer periphery of the hard disk 5.

With the hard disk device thus structured, when the housing had a great impact in the direction of arrows a and a' orthogonal to the hard disk 5, the pair of upper and lower heads 4 with a slider are brought into contact with the pair of upper and lower buffer members 13, which absorb and reduce the impact energy.

Accordingly, the damage to the second supporting member 3 as the head supporting member and to the heads 4 with a slider, which is caused by

the second supporting member 3 being rotated in the arrows a and a' direction by the first supporting member 2 due to the impact in the a and a' arrow directions, can be prevented.

The air stream generated by the high speed rotation of the hard disk 5 in the arrow b direction is guided by the pair of upper and lower buffer members 13 and flows smoothly in the arrow d direction from the inner circumference toward the outer circumference of the hard disk 5 in the neighborhood of the slider-attached heads 4, so the dust contained in the air stream can be removed by the circulation filter 14 quickly and effectively. Therefore, the spacing cloth problem caused by the dust penetration between the slider-attached head 4 and hard disk 5 can be prevented.

On embodiment example of the present invention was explained above, but the embodiment of the present invention is not limited to the above example; a variety of modifications can be applied using the technical idea of the present invention.

The present invention can be applied to a variety of disk device for recording on and reproducing from a variety of disk-formed recording media other than a hard disk.

(Advantage)

The disk device of the present invention, for its being constructed as above, has the following advantages.

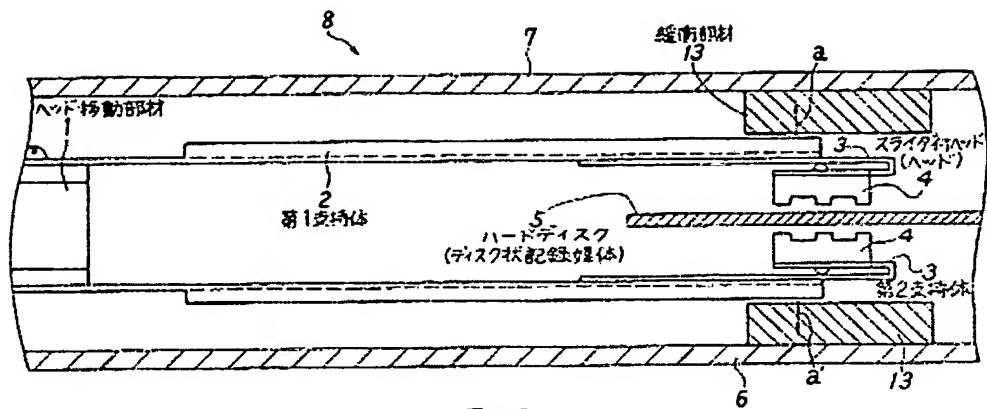
When a great impact is exerted in the direction orthogonal to the disk-formed medium, the head is brought into contact with the buffer member and its impact can be reduced, so the damage to the head and head supporting member can be prevented. Accordingly, the disk can be improved in terms of safety and reliability.

BRIEF DESCRIPTION OF THE DRAWINGS

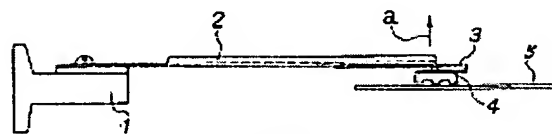
Fig. 1 and Fig. 2 shows one embodiment example of the present invention. Fig. 1 shows an expanded side view for the key components. Fig. 2 shows a planar view of the housing when the cover is removed.

Fig. 3 shows a side view of the prior art device.

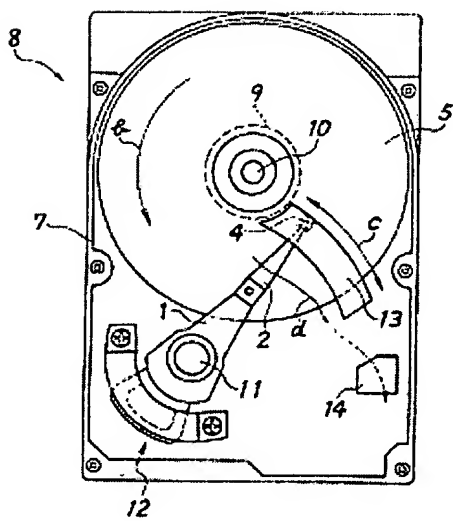
1. head moving member
2. first supporting member
3. second supporting member
4. slider-attached head (head)
5. hard disk (disk-formed recording medium)
13. buffer member



要部
第1図



従来例
第3図



全体
第2図

Translations

U. S. Patent and Trademark Office

12/23/05

Akiko Smith